

REMARKS

Claims 46-53, 56-65, and 68-69 are currently pending. Claims 54-55 and 66-67 have been cancelled. No claims have been amended with this response.

The Examiner rejected claims 46, 48, 50, 53, 56-58, 60, 62, 65, and 68-69 under 35 U.S.C. §102(b) as being anticipated by Cousimano (U.S. Patent No. 4,302,935).

Claim 46 recites a tube configured to attach to an engine housing and to guide a fluid. The tube includes a first component having an interior, and a bend portion. The bend portion has a curved outer bend surface adjacent the interior and has a first inner bend surface adjacent the interior that has a substantially sharp corner. A second component is positioned adjacent the sharp corner and includes a curved surface that has a second inner bend surface. The second inner bend surface and the outer bend surface cooperate to guide all of the fluid flow through the bend portion.

Cousimano does not teach or suggest, among other things, a tube that includes a first component that has a bend portion that includes a curved outer bend surface adjacent an interior and a first inner bend surface adjacent the interior that has a substantially sharp corner. In addition, Cousimano does not teach or suggest a second component positioned adjacent the sharp corner and including a curved surface that includes a second inner bend surface arranged such that the outer bend surface and the second inner bend surface cooperate to guide all of the fluid flow through the bend portion.

Rather, Cousimano discloses a tube T and an insert A. The tube does include a bend that defines an outer bend surface and an inner bend surface. However, the first inner bend surface does not include a sharp corner adjacent the interior. The only sharp corner of the first component is the flange corner which is not disposed adjacent the interior, but rather is disposed

outside of the first component and away from the bend portion. The Examiner argues that Cousimano teaches a sharp corner as the bend in Cousimano covers a 90-degree angle. While Cousimano does redirect the flow through an angle that is about 90-degrees, this is irrelevant to the claim. The claim states that a first inner bend surface adjacent the interior has a substantially sharp corner. Thus, the corner is formed as part of the first component and is not defined by the angular change in direction of the flow in the tube. In fact, the change in direction of the flow is irrelevant. Thus, the Examiner's argument in support of the rejection based on Cousimano relies on an incorrect determination of what is meant by a "sharp corner." Merriam Webster Online (<http://www.m-w.com>) defines "sharp" as "terminating in a point or edge." Thus, a "sharp corner" in the present context is a corner having an edge. Cousimano does not show or suggest a "sharp corner" positioned as recited in Applicants' claims.

Furthermore, the insert A, extends into a straight portion of tube T as is illustrated in Fig. 1. Fig. 1 shows a first line that represents the end of the tube and a second line, parallel to the first line and spaced from the first line. This second line appears to indicate the end of the bend portion and the start of a straight portion that extends from the bend portion to the end of the tube. The insert A stops at this line. As such, the insert cannot include a surface that cooperates with the outer bend surface to guide fluid through the bend portion, as all of the fluid has passed the bend portion before the fluid reaches the insert A.

In light of the foregoing, Cousimano does not teach or suggest each and every limitation of claim 46. As such, claim 46 is allowable over Cousimano. In addition, claims 47-53 and 56-57 depend from claim 46 and are allowable over Cousimano.

Claim 58 defines a tube configured to attach to an engine housing and to guide a fluid along a tube interior. The tube includes a bend portion that has a curved outer bend surface

adjacent the interior and a curved inner bend surface adjacent the interior. The tube includes a first component that defines the outer bend surface and a sharp corner opposite the outer bend surface and adjacent the interior. A second component is positioned adjacent the sharp corner and includes a curved surface that at least partially defines the curved inner bend surface.

Cousimano does not teach or suggest a tube that includes a first component that defines the outer bend surface and a sharp corner opposite the outer bend surface and adjacent the interior. As discussed with regard to claim 46, the Examiner's argument is based on the incorrect determination that a change in the direction of flow of about 90-degrees constitutes a sharp corner. One of ordinary skill in the art would not agree with the Examiner's apparent conclusion that a device that gradually changes the direction of a flow by 90-degrees includes a sharp corner. A 90-degree change in flow direction that occurs gradually is not considered a sharp corner. Furthermore, the claim language makes no reference to the change in flow direction. As such, the change in direction of the flow has no bearing on whether or not a sharp corner is taught by Cousimano. The claim states that the sharp corner is opposite the outer bend surface and is defined by the first component. The fact that Cousimano turns the flow through a 90-degree direction change does not amount to a teaching of a sharp corner formed as part of the same component as the outer bend surface and disposed opposite the outer bend surface.

In light of the foregoing, Cousimano does not teach or suggest each and every limitation of claim 58. As such, claim 58 is allowable over Cousimano. In addition, claims 59-65 and 68-69 depend from claim 58 and are allowable over Cousimano.

The Examiner rejected claims 46-50, 53, 56-62, 65, and 68-69 under 35 U.S.C. §102(b) as being anticipated by Reed (U.S. Patent No. 1,300,015).

Claim 46 defines a tube configured to attach to an engine housing and to guide a fluid. The tube includes a first component having an interior and a bend portion. The bend portion has a curved outer bend surface adjacent the interior and has a first inner bend surface adjacent the interior that has a substantially sharp corner. A second component is positioned adjacent the sharp corner and includes a curved surface that has a second inner bend surface. The second inner bend surface and the outer bend surface cooperate to guide all of the fluid flow through the bend portion.

Reed does not teach or suggest, among other things, a tube that includes a first component having a curved outer bend surface adjacent the interior and a first inner bend surface adjacent the interior that has a substantially sharp corner, and a second component positioned adjacent the sharp corner and including a curved surface that has a second inner bend surface arranged such that the second inner bend surface and the outer bend surface cooperate to guide all of the fluid flow through the bend portion.

Rather, Reed discloses a mixer that includes a manifold 1 that makes a 90-degree bend before connecting to a valve chamber 2. A mixing device positioned within the manifold includes a ring 6 and a plurality of blades 7 that induce a swirl in the fluid as it passes through the mixer. Reed does not teach or suggest positioning the mixer adjacent a sharp corner such that all of the flow is guided by an outer bend surface of the manifold and an inner bend surface of the mixer. Some of the flow in Reed passes between the mixer and the inner bend surface of the manifold such that it is not guided by the outer bend surface. Furthermore, even if we assume Reed discloses a “sharp bend” as stated by the Examiner, a “sharp bend” is not a “sharp corner,” as shown above.

In light of the foregoing, Reed does not teach or suggest each and every limitation of claim 46. As such, claim 46 is allowable over Reed. In addition, claims 47-53 and 56-57 depend from claim 46 and are allowable over Reed.

Claim 58 defines a tube configured to attach to an engine housing and to guide a fluid along a tube interior. The tube includes a bend portion that has a curved outer bend surface adjacent the interior and a curved inner bend surface adjacent the interior. The tube includes a first component that defines the outer bend surface and a sharp corner opposite the outer bend surface and adjacent the interior. A second component is positioned adjacent the sharp corner and includes a curved surface that at least partially defines the curved inner bend surface.

Reed does not teach or suggest a second component positioned adjacent a sharp corner and including a curved surface that at least partially defines the curved inner bend surface. Rather, Reed discloses a mixer positioned within a manifold. The mixer does not include a curved surface that at least partially defines a curved inner bend surface. Additionally, the mixer is not adjacent a sharp corner or a sharp bend. Rather, the mixer is substantially centered within the manifold, and as such cannot define a portion of the inner bend surface.

In light of the foregoing, Reed does not teach or suggest each and every limitation of claim 58. As such, claim 58 is allowable over Reed. In addition, claims 59-65 and 68-69 depend from claim 58 and are allowable over Reed.

The Examiner rejected claims 51-52 and 63-64 under 35 U.S.C. §103(a) as being unpatentable over Cousimano in view of Reed.

Claims 51-52 depend from claim 46 and claims 63-64 depend from claim 58. As discussed with regard to the 35 U.S.C. §102(b) rejections, neither Cousimano nor Reed teach or suggest each and every limitation of claims 46 or 58, much less those of claims 51-52 or 63-64.

Combining the teachings of Cousimano with those of Reed does not cure the deficiencies of Cousimano and Reed alone.

Neither Cousimano nor Reed teaches or suggests positioning a second component adjacent a sharp corner of a first component. Additionally, Neither Cousimano nor Reed disclose positioning the second component such that all of the fluid flows between an outer bend surface and the second component as recited in claim 46, or a second component positioned to define a portion of an inner bend surface.

Furthermore, there is no motivation to combine the teachings of Reed with those of Cousimano. Cousimano discloses a system in which an insert A is positioned within a tube T to fill stagnation areas, thereby reducing the turbulence of the flow within the tube. Reed on the other hand employs a mixer positioned within a manifold to induce swirl to increase mixing. Thus, the two references have opposing goals and as such cannot be readably combined. Rather, one of ordinary skill in the art would choose one over the other depending on the desired operation.

In light of the foregoing, Cousimano and Reed, alone or in combination do not teach or suggest each and every limitation of claims 46 or 58. As such, claim 46 and 58 are allowable. In addition, claims 51-52 and 63-64 depend from claims 46 and 58 and are also allowable.

CONCLUSION

In light of the foregoing, Applicants respectfully submit that claims 46-53, 56-65, and 68-69 are allowable.

The undersigned is available for telephone consultation during normal business hours.

Respectfully submitted,



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